1125-35-2071 **Casey Douglas*** (cjdouglas@smcm.edu), 18952 E. Fisher Rd., St. Mary's City, MD 20686.

Non-Euclidean Photography: The World of Mirrors.

Optical devices consisting of cameras and mirrors are called catadioptric sensors, whose design lies at the intersection of both pure and applied mathematics. Its primary goal is to construct mirror surfaces to photograph the world in informative ways. In particular, mirrors are designed so that the catadioptric sensor preserves certain geometric properties, thereby establishing deep and original connections between differential geometry and optical engineering. Some examples include, wide-angle mirrors with no distortion and mirrors mimicking classical map projections. We will give multiple examples of accessible yet open problems in mirror design. (Received September 20, 2016)